187

TEAC®

AS-60

AM-FM STEREO RECEIVER

SERVICE MANUAL

TEAC CORPORATION

187

TABLE OF CONTENTS

TECHNICAL SPECIFICATIONS 1
PRECAUTIONS 3
TEST EQUIPMENT REQUIRED 3
IF ALIGNMENT 4
FM FRONT END ALIGNMENT 7
MUTING LEVEL SETTING 7
TUNING METER CALIBRATON 7
FM MULTIPLEX ALIGNMENT 10
AM TUNER ALIGNMENT 13
OUTPUT TRANSISTOR PROTECTION ADJUSTMENT 15
PREAMPLIFIER 17
POWER DRIVE AMPLIFIER 19
MINOR MAINTENANCE 20
DIAL STRING 20
MAIN CHASSIS EXPLODED VIEW 22
SIMPLIFIED BLOCK DIAGRAM 23
SCHEMATIC DIAGRAM 24
PARTIAL DISASSEMBLY 25

TECHNICAL SPECIFICATIONS

FM TUNER SECTION

Frequency Range	88—108 MHz
Usable Sensitivity (IHF)	2.5 μV
IF Selectivity	250 KHz —3 db
FM Channel Separation	40 db (at 1 KHz)
FM Stereo Distortion	Less than 1%
FM Stereo Frequency Response	50—15000Hz (±1.5 db)
Capture Ratio	2.0 db

AM TUNER SECTION

Frequency Range	535—1605 KHz
Sensitivity	10 μV for 20 db S/N ratio
IF Frequency	455 KHz
IF Selecticity	6 KHz —3 db

AUDIO SECTION

Dynamic Power (IHF)	4 Ω 100 watts total (± 1 db)
RMS Power	4 Ω 40 watts per channel (± 1 db)
Overall Frequency Response	20—20000 Hz (± 1 db)
Power Amplifier Frequency Response	10—80000 Hz (± 1 db)
Harmonic Distortion	1% at 1000 Hz at rated RMS Power
Power Bandwidth (IHF)	30—60000 Hz (± 1 db)
Channel Separation (at 1 KHz)	Phono 50 db. Aux 55 db.
Hum and Noise (IHF)	Phono 60 db or more. Aux 70 db or more
Input Sensitivity for Rated Output and Impedance	Phono 4mV 50KΩ. Tape Player 300mV 100KΩ. Tape Play-back Deck 1 & 2 300mV 100KΩ. Aux 300mV 100KΩ. Power Amplifier 700mV 50KΩ.
Output Level and Impedance	Tape Record 1 & 2 200mV 100KΩ load. Preamp Output 700mV 50KΩ load.
Equalization	Phono (RIAA)
Bass Control	30db total variation at 50Hz 12db boost 18db cut
Treble Control	30db total variation at 10000Hz 15db boost 15db cut
Low Filter	20db cut at 50Hz
High Filter	11db cut at 10000Hz
Center Channel Output	4.4V at rated output 50KΩ load
Speaker Output Impedance	4—32Ω

POWER REQUIREMENTS

Serial Number prefix (50/60Hz)	N 100VAC. U 115VAC. E 110/220VAC. M 100/115VAC.
Power Consumption	130 watts (at full rated power output)

MEMORANDA

PRECAUTIONS

The alignment procedures described in this manual should be performed only by a qualified technician with adequate and properly calibrated test equipment.

The procedures given are designed as a guide for obtaining proper results when performed by a technician who has a complete understanding of transistor circuits and multiplex operation.

When replacing transistors exercise care not to overheat the the transistor or associated circuitry. Be sure to use a heat sink on the leads. guard against excessive solder or poor connections in the FM circuitry.

When replacing the power transistors be sure the bottom of the transistor and the heat sink are clean and apply a coating of silicon grease such as Dow Corning DC-3 between the transistor and mica insulator and on the surface of heat sink.

Replacement of transistors will normally not require realignment of the FM circuitry. Realignment of these circuits, unless absolutely necessary, is not recommended.

The test points of the TEAC AS-60 are marked on the printed circuit board. Most points where a connection is to be made are raised loops or short stubs of insulated wire.

TEST EQUIPMENT REQUIRED

Vacuum Tube Voltmeter
- AC 0.5V–300V
- DC 0.5V–100V
- OHMS 1Ω–1MΩ

Audio VTVM
- 0.001–300V
- –60–50db
- 10–4MHz

Oscilloscope
- 3 or 5 Inch Type
- Vertical Input 1.5Hz–1 MHz
- Horizontal Sweep 10Hz–100 KHz

Audio Oscillator
- 5 Hz–600 KHz
- Output Impedance 600 Ω
- MAX Voltage 7V

AM/FM Signal Generator
- AM 500 KHz–1600 KHz
- FM 85 MHz–109 MHz
- RF Out put 0–100 db

Mutiplex Generator
- Out put Voltage 5V (rms) Terminal Open
- Seperation 40db or more

Sweep Generator

	Voltage	Frequency
RF Out put	1V (rms)	98±14 MHz
IF Out put	1V (rms)	10.7±0.15 MHz

Alignment Scope
- Vertical Input 2 Hz–100 KHz
- Input 1 MΩ 500 pF
- Horizontal Input 3 Hz–50 KHz

I. F. ALIGNMENT

1. Check the voltage at test point B. For proper results this voltage should be 12 to 13VDC.
2. Connect a 10.7 MHz sweep generator to B TP on the FM front end board. (If the sweep generator does not have a series isolation circuit, connect a 0.1 μf−.001 μf capacitor in series.)
3. Connect the vertical sweep input of the oscilloscope to Test Point 2 on the I. F. circuit board.
4. Adjust the sweep generator output level and frequency to obtain an I. F. response curve on the oscilloscope. Keep the sweep generator output as low as possible.
5. De-tune the top and bottom cores of T-204 outwards.
6. Align the top and bottom cores of L-104 (on front end) and T-201, T-202 and T-203 (on I.F. board) for maximum gain and symmetry. Refer to Figure 1 for desired waveform. Repeat the alignment.

   NOTE : Do not turn any of the cores on the I. F. transformers more than ⅛ turn.
7. Disconnect the sweep generator from B TP and connect it to Test Point 3.
8. Connect the vertical sweep input of the oscilloscope to the point marked AF OUT.
9. Adjust the sweep generator output voltage to observe the ratio detector response. Keep the generator output as low as possible.
10. Adjust the top and bottom cores of T-204 for maximum gain then readjust the top core for most linear response. Refer to Figure 2 for the desired waveform.
11. Decrease the sweep generator output. The ratio detector response should remain linear until it becomes obscure.

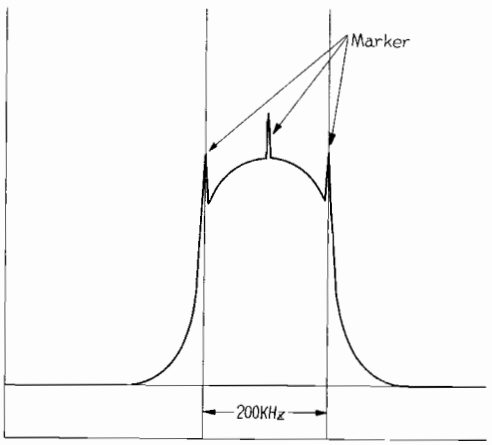


FIG.1

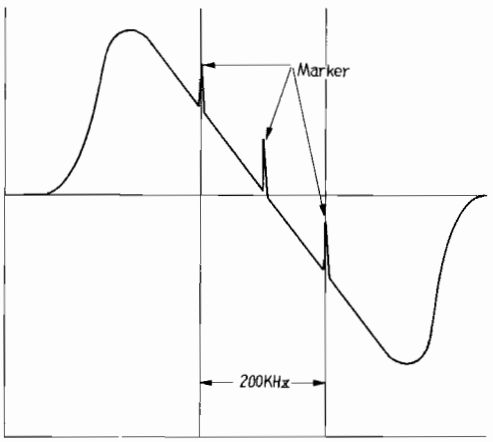
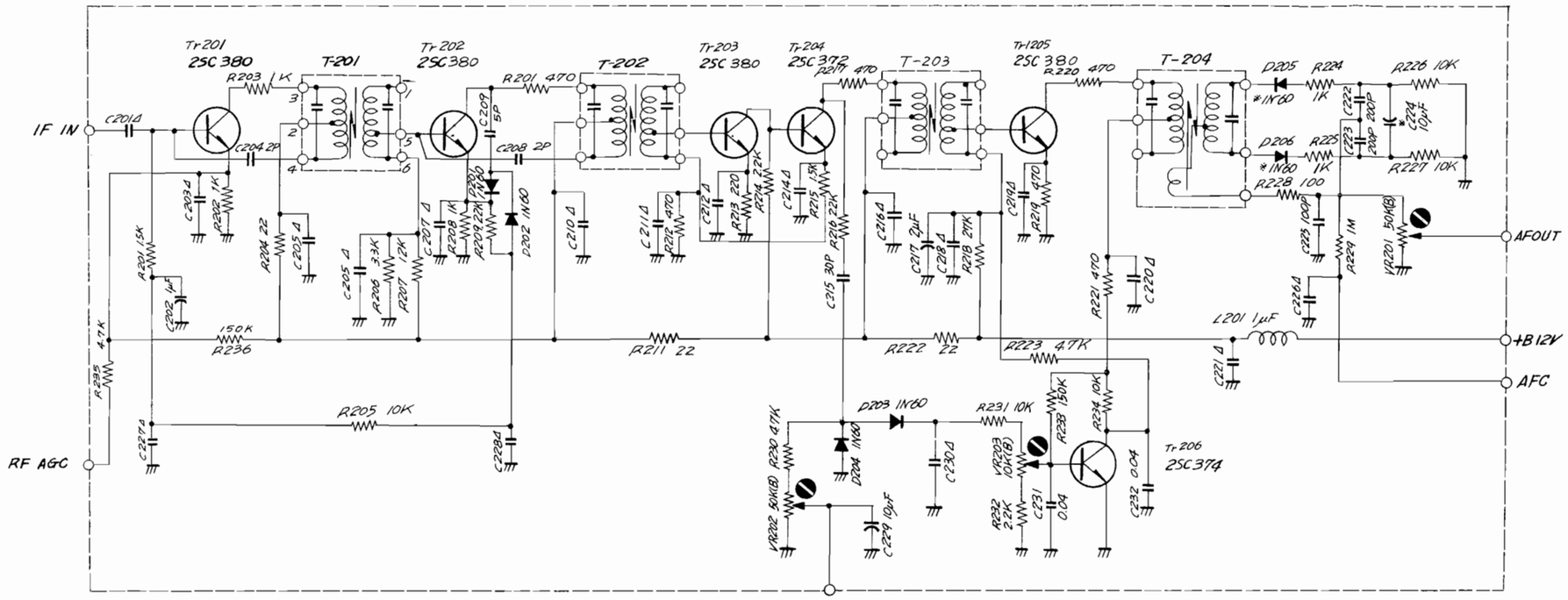
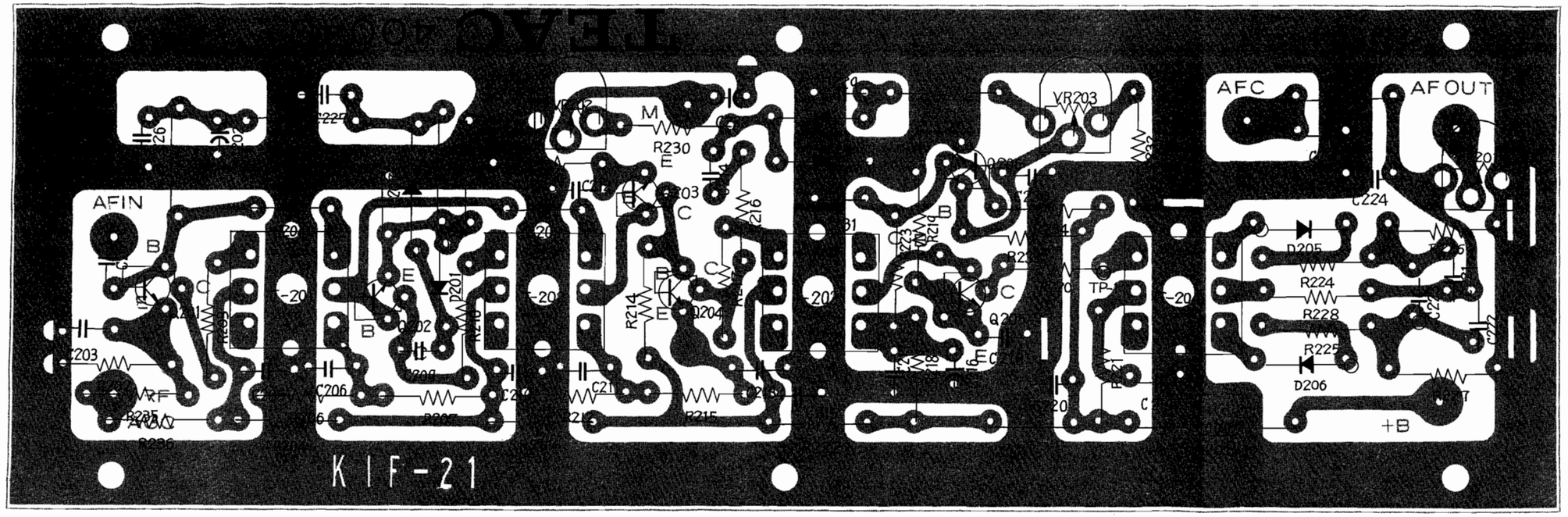


FIG.2

I. F. AMPLIFIER





PRINTED BOARD VIEWED FROM BOTTON

I.F. AMPLIFIER PARTS LIST

REF. No.	PARTS No.	DESCRIPTION
	48831	IF AMP ASS'Y Printed Board
		Capacitors
C201		0.01μF $^{+100}_{-0}$% 50V
C202		1μF 6WV (Stand Type)
C203		0.01μF $^{+100}_{-0}$% 50V
C204		2pF ±0.5pF 50V
C205		0.01μF $^{+100}_{-0}$% 50V
C206		0.01μF $^{+100}_{-0}$% 50V
C207		0.01μF $^{+100}_{-0}$% 50V
C208		2pF ±0.5pF
C209		5pF ±10% 50V
C210		0.01μF $^{+100}_{-0}$% 50V
C211		0.01μF $^{+100}_{-0}$% 50V
C212		0.01μF $^{+100}_{-0}$% 50V
C213		0.01μF $^{+100}_{-0}$% 50V
C214		30pF ±10% 50V
C215		0.01μF $^{+100}_{-0}$% 50V
C216		2μF 6WV (Stand Type)
C217		0.01μF $^{+100}_{-0}$% 50V
C218		0.01μF $^{+100}_{-0}$% 50V
C219		0.01μF $^{+100}_{-0}$% 50V
C220		0.01μF $^{+100}_{-0}$% 50V
C221		200pF ±10% 50V
C222		200pF ±10% 50V
C223		10μF 15WV (Stand Type)
C224		100pF ±10% 50V
C225		0.01μF $^{+100}_{-0}$% 50V
C226		0.01μF $^{+100}_{-0}$% 50V
C227		0.01μF $^{+100}_{-0}$% 50V
C228		10μF 15WV (Stand Type)
C229		0.01μF $^{+100}_{-0}$% 50V
C230		0.04μF $^{+100}_{-0}$% 50V
C231		0.04μF $^{+100}_{-0}$% 50V
		Diodes
D201		IN 60
D202		IN 60
D203		IN 60
D204		IN 60
D205		IN 60 } pair
D206		IN 60 }
		RF Coil
L201		1μH

REF. No.	PARTS No.	DESCRIPTION
		Transistors
Q201		2 SC 380-Y
Q202		2 SC 380-O
Q203		2 SC 380-O
Q204		2 SC 380-O
Q205		2 SC 380-O
Q206		2 SC 374
		Resistors
R201		1.5K 1/4W 10%
R202		1K
R203		1K
R204		22
R205		10K
R206		3.3K
R207		12
R208		1K
R209		22K
R210		470
R211		22
R212		470 1/4W 10%
R213		220
R214		2.2K
R215		1.5K
R216		2.2K
R217		470
R218		27K
R219		470
R220		470
R221		470
R222		22
R223		4.7
R224		1K
R225		1K
R226		10K
R227		10K
R228		100
R229		1M
R230		4.7K
R231		10K
R232		2.2K
R233		150K
R234		10K
R235		4.7K
R236		150K
		IF Transformers
T-201		T-201B
T-202		T-204B
T-203		T-204B
T-204		T-205A

FM FRONT END ALIGNMENT

1. Set the tuning dial pointer full left.
2. Set the AFC and MUTING switches to OFF. Place the MODE selector in FM.
3. Connect an FM RF generator to the antenna terminals. Place the antenna switch in the DX position. (If the RF generator has a 75 ohm output it must be matched to the 300 ohm receiver input. Be sure to compensate for any insertion loss of a matching unit.)
4. Connect AC VTVM to REC OUTPUT (left or right). Set the VTVM range to approximately 0.2 V. Connect an oscilloscope to aid in adjusting the RF generator.
5. Check the voltage at Test Point +12V. It should be 12 to 13VDC.
6. Set the FM generator to 87 MHz, −20db output.
7. Adjust oscillator coil L-105 for proper tracking then adjust L-101, L-102 cores for maximum VTVM reading.
8. Set the tuning dial and RF generator to 109 MHz.
9. Adjust oscillator trimmer TC-103 from the top. Do not remove the front end shielded cover. Then adjust RF trimmer TC-101 and TC-102 for maximum reading on the VTVM.
10. Repeat the coil and capacitor alignment several times until accurate dial calibration and maximum gain are obtained. The maximum error is .3 MHz.

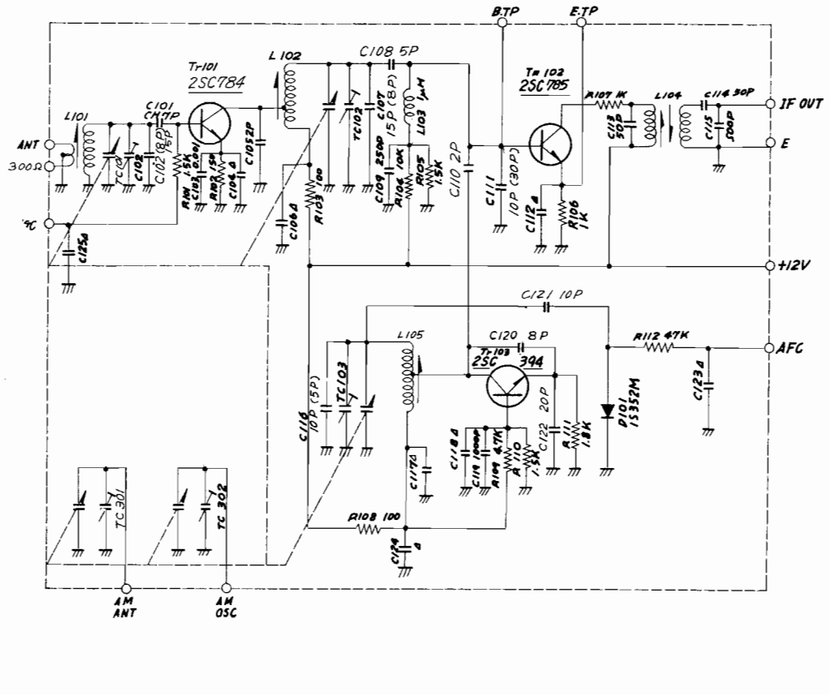
MUTING LEVEL SETTING

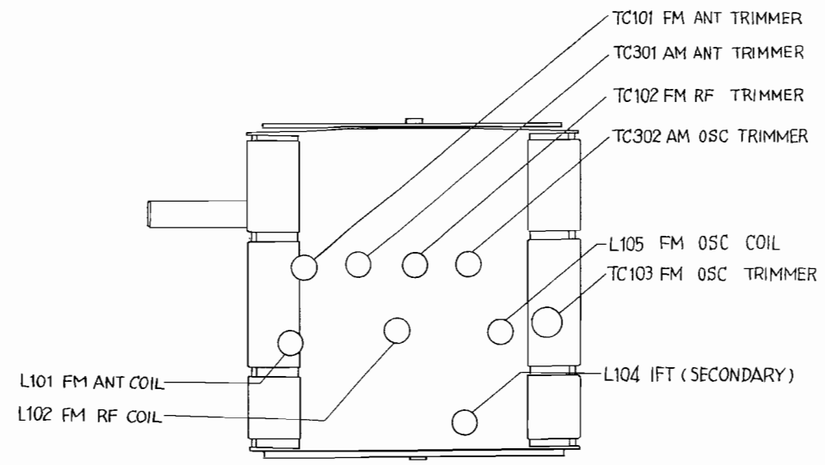
1. Connect an FM RF generator to the antenna terminals. Set the output vol -tage to 18 db and frequency to 90MHz with 1KHz modulation.
2. Set the MUTING switch to OFF.
3. Adjust the tuning knob for maximum reading on the VTVM or tuning meter.
4. Turn the MUTING switch ON. Adjust the muting level potentiometer VR-203 (top of I.F. stage) so the output reading drops to zero. The signal should come back to the previous level when the switch is turned off.

TUNING METER CALIBRATION

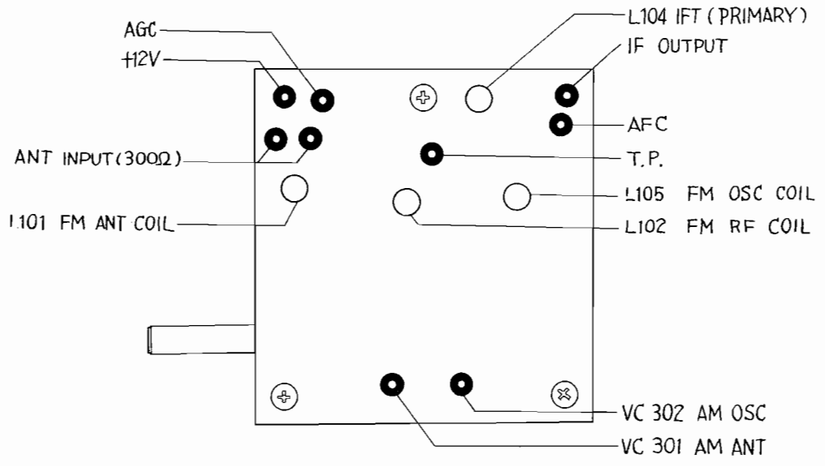
1. Connect FM RF generator to the antenna terminals. Adjust the output voltage for 40db (100 μV) and the frequency to 90MHz with 1KHz modulation.
2. Set the tuning dial to 90 MHz and adjust for maximum indication on the tuning meter.
3. Adjust tuning meter calibration VR-202 so the needle is in the center of the last meter reference mark.

FM FRONT END





TOP VIEW



BOTTOM VIEW

FM FRONT END PARTS LIST

REF. No.	PART No.	DESCRIPTION
	48833	FM FPONT END ASS'Y
		Capacitors
C101		7pF ±10% 50V
C102		8pF ±10% 50V
C103		0.001μF $^{+100}_{-0}$% 50V
C104		0.01μF $^{+100}_{-0}$% 50V
C105		15pF ±0.5pF 50V
C106		0.01μF $^{+100}_{-0}$% 50V
C107		10pF ±10% 50V
C108		5pF ±10% 50V
C109		250pF ±10% 50V
C110		2pF ±0.5pF 50V
C111		10pF ±10% 50V
C112		0.01μF $^{+100}_{-0}$% 50V
C113		50pF ±10% 50V
C114		50pF ±10% 50V
C115		500pF ±10% 50V
C116		10pF ±10% 50V
C117		0.01μF $^{+100}_{-0}$% 50V
C118		0.01μF $^{+100}_{-0}$% 50V
C119		0.001μF $^{+100}_{-0}$% 50V
C120		5pF ±10% 50V
C121		7pF ±10% 50V
C122		20pF ±10% 50V
C123		0.01μF $^{+100}_{-0}$% 50V
C124		0.01μF $^{+100}_{-0}$% 50V
C125		0.01μF $^{+100}_{-0}$% 50V
C126		0.01μF $^{+100}_{-0}$% 50V
		Diode
D101		1S352M

REF. No.	PART No.	DESCRIPTION
		Tuning Coil
L101U		L101 TU
L102U		L103 TU
L103		1μH
L104		T-100
L105U		L106 TU
		Resistors
R101		1.5K 1/4W± 10%
R102		220
R103		100
R104		10K
R105		1.5K
R106		1K
R107		1K
R108		100
R109		8.2K
R110		1.5K
R111		1.5K
R112		47K

FM MULTIPLEX ALIGNMENT

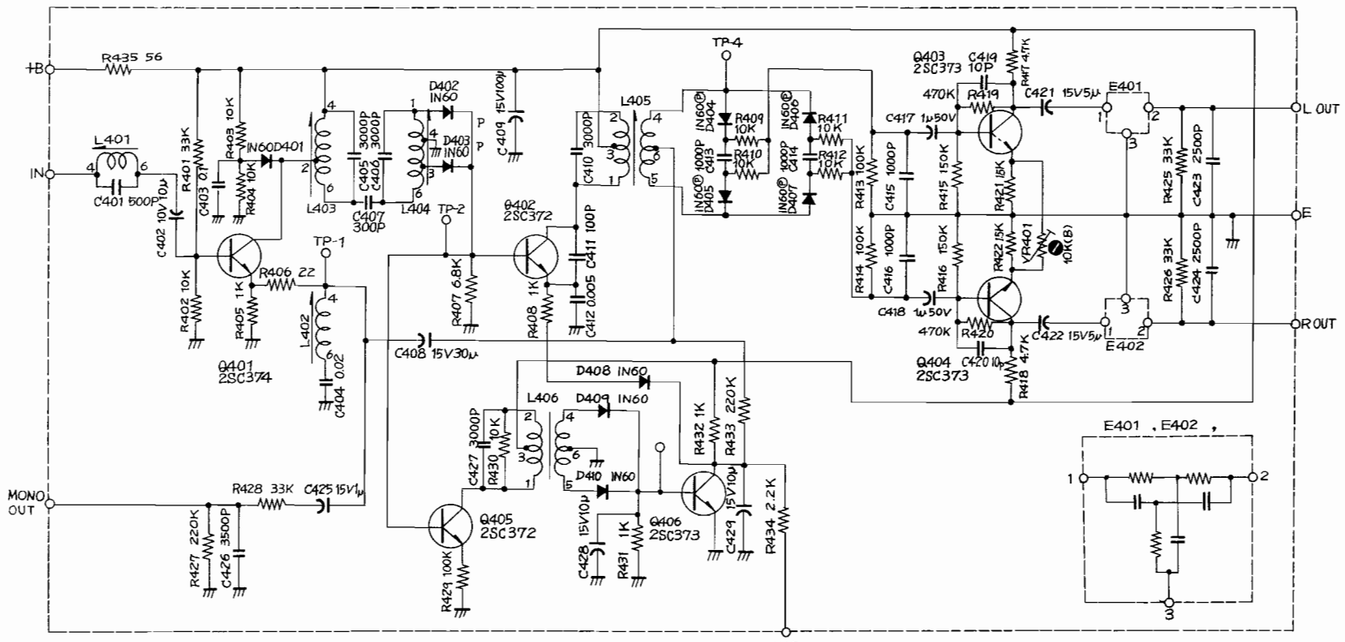
1. Connect an RF FM Generator to the antenna terminals. Set the generator to 90MHz with 40db (100 μV) output. Set the source switch to FM AUTO and MUTING to OFF.
2. Connect a Multiplex Generator to the RF generator external modulation input. Set the MPX generator to L+R (stereo) signal with 100% modulation. Set MPX Generator to left.
3. Connect an AC VTVM to the center terminal of VR-201 (AF output).
4. Adjust VR-201 for a reading of 200mv on the VTVM.
5. Connect the VTVM or oscilloscope to Test Point TP 2 (on multiplex circuit board).
6. Adjust L-402, L-403, and L-404 for maximum reading on the VTVM.

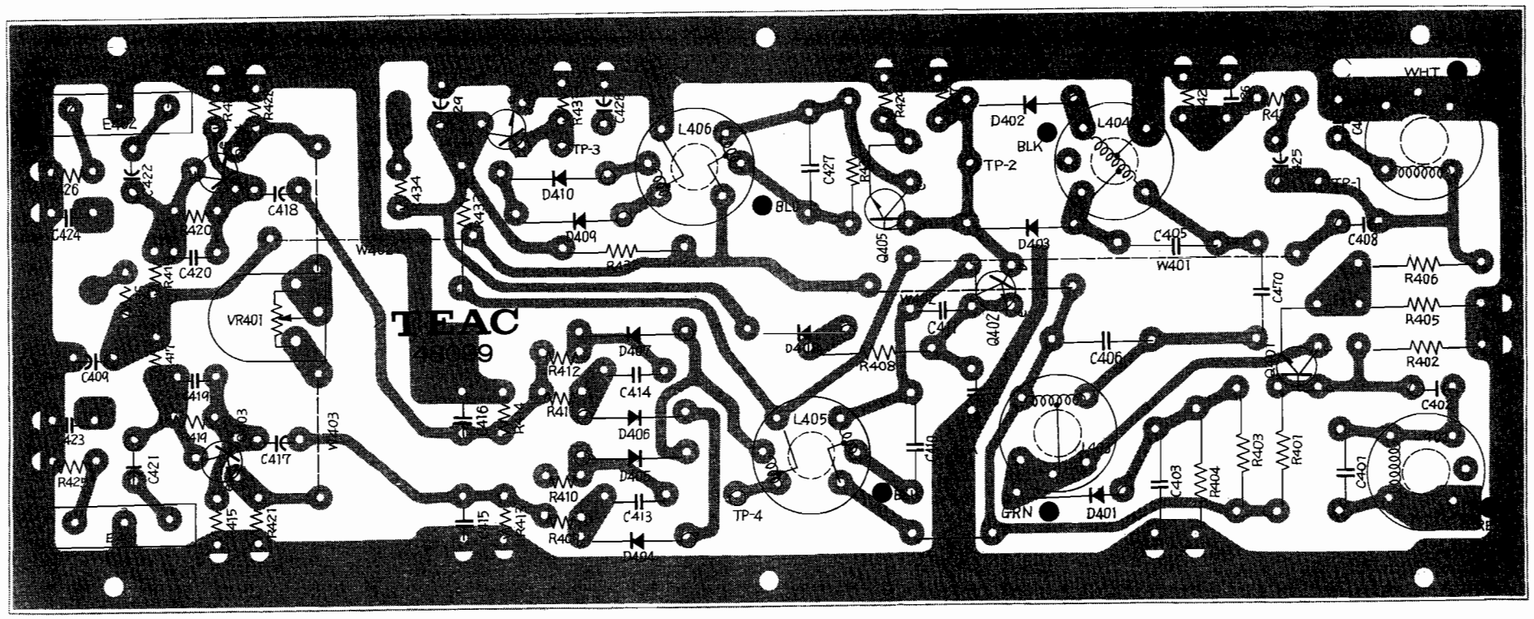
   NOTE: The FM stereo light should be on during these adjustments. If it is not, check the voltage at TP-3. It should be .5 to .8v when a MPX Pilot signal is present.
7. Connect the VTVM to TP-4. Adjust L-405 for maximum output.
8. Connect the VTVM to the left record output jack. Set multiplex output to left channel. If previous alignment is correct, the VTVM should .3 volts

   and Set the VR-401 fully counterclockwise.
9. Set MPX output to right channel. No voltage should be present at the left record output. If a voltage is present, carefully touch up the adjustment of L-402, L-403, L-404 and L-405 for minimum output.
10. Set the MPX to left and connect the VTVM to the right record output. Adjust separation control VR-401 for minimum reading.
11. Connect the VTVM to the right record output. Set the MPX output to right channel. The output level of the right and left channels should be within 1db. Set the MPX output to left. No voltage should be present at the right record ouput.
12. Repeat the above procedures until an output as close to .3v and within 1db of the opposite channel output is achieved. The separation should be 35 to 40 db.

    NOTE: L-401 is part of the SCA filter circuit and requires no adjustment. L-406 is a very broad adjustment and should require no adjusting.

FM. MULTIPLEX





PRINTED BOARD VIEWED FROM BOTTOM

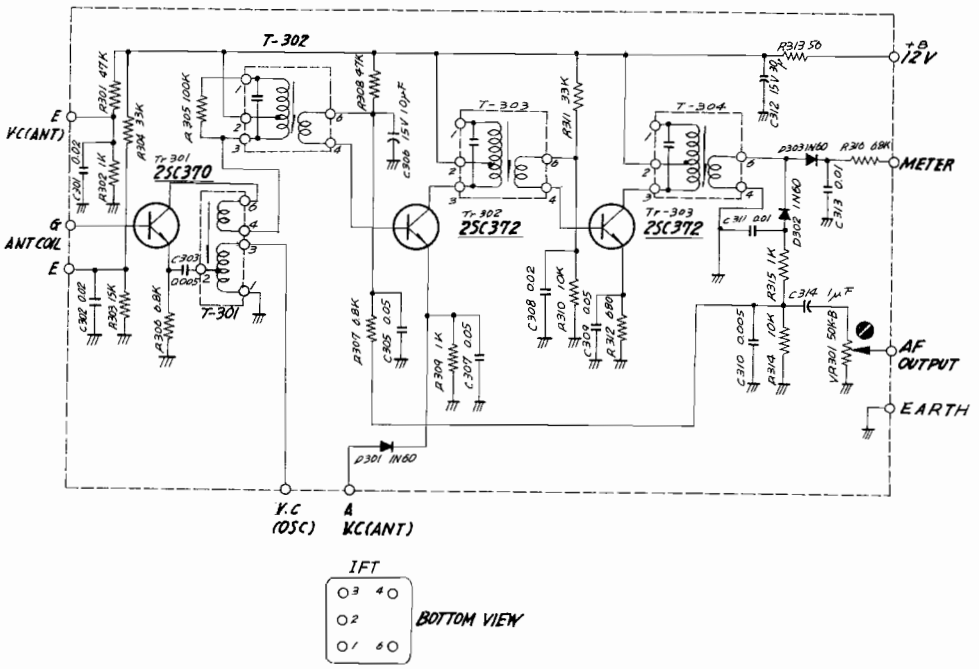
FM MULTIPLEX PARTS LIST

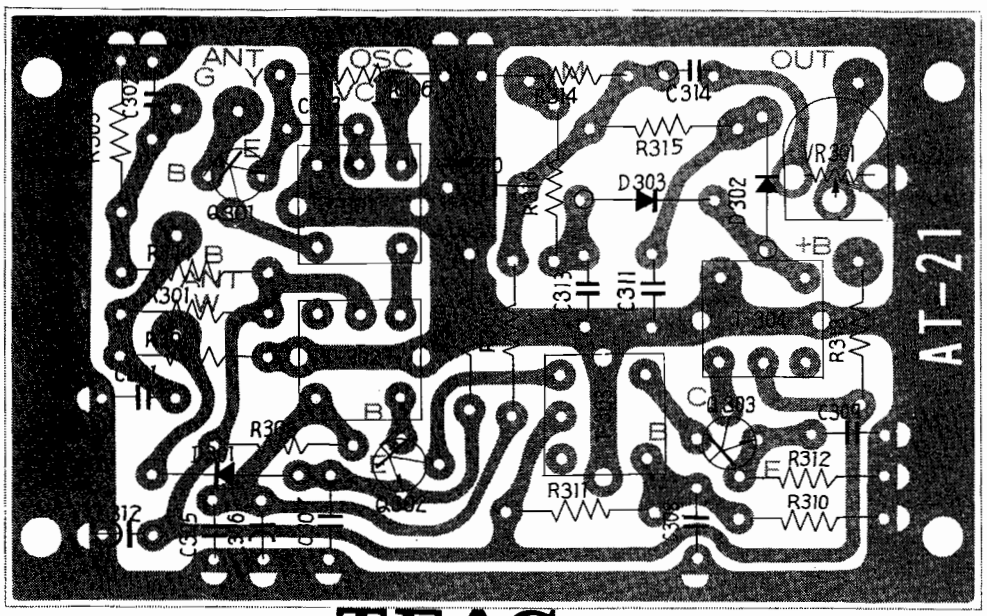
REF. No.	PART No.	DESCRIPTION
	48825	M. P. X. ASS'Y
		Capacitors
C401	54908	500pF(K) 50WV
C402		10μF 10WV
C403	54804	0.1μF 10% 50WV
C404	54804	0.1μF 10% 50WV
C405	54909	3000pF 10% 50WV
C406	54909	3000pF 10% 50WV
C407	54910	3000pF 10% 50WV
C408		30μF 15WV
C409		100μF 15WV
C410	54911	3000pF 5% C50WV
C411	54912	100pF 10% 50WV
C412	54805	0.005μF 10% 50WV
C413	54832	0.001μF 10% 50WV
C414	54832	0.001μF 10% 50WV
C415	54832	0.001μF 10% 50WV
C416	54832	0.001μF 10% 50WV
C417		1μF 50WV
C418		1μF 50WV
C419	54904	10pF 10% 50WV
C420	54904	10pF 10% 50WV
C421		5μF 15WV
C422		5μF 15WV
C423	54834	0.0025μF 50WV
C424	54834	0.0025μF 50WV
C425		1μF 50WV
C426	54835	0.0035μF 10% 50WV
C427	54909	3000pF 10% 50WV
C428		10μF 15WV
C429		10μF 15WV
		Diodes
D401	42213	IN60
D402	42217	IN60 (Pair)
D403	42217	IN60 (Pair)
D404	42217	IN60 (Pair)
D405	42217	IN60 (Pair)
D406	42217	IN60 (Pair)
D407	42217	IN60 (Pair)
D408	42213	
D409	42213	
D410	42213	
		Filters
E401	52904	38K Hz Filter (MR-20)
E402	52904	38K Hz Filter (MR-20)
		FM MPX Coils
L401	56616	67K Hz Coil 11.8mH ±15%
L402	56617	19K Hz Coil A 3.5mH ±15%
L403	56618	19K Hz Coil B 22mH ±15%
L404	56620	19K Hz Coil C 22mH ±15%
L405	56619	38K Hz Coil 5.7mH ±15%
L406	56619	38K Hz Coil 5.7mH ±15%

REF. No.	PART No.	DESCRIPTION
		Transistors
Q401	42340	2SC374
Q402	42325	2SC372
Q403	42338	2SC373
Q404	42338	2SC373
Q405	42325	2SC372
Q406	42338	2SC373
		Resistors
R401		33K 1/4W 10% S Type
R402		10K
R403		10K 1/4W 10% S Type
R404		10K
R405		1K
R406		22
R407		6.8K 1/4W 10% SR Type
R408		1K 1/4W 10% S Type
R409		10K
R410		10K 1/4W 10% SR Type
R411		10K
R412		10K
R413		100K
R414		150K
R415		150K
R416		100K
R417		4.7K
R418		4.7K
R419		470K
R420		470K
R421		1.5K
R422		1.5K
R425		33K
R426		33K
R427		220K
R428		33K
R429		100
R430		10K 1/4 10% S Type
R431		1K 1/4W 10% SR Type
R432		1K 1/4W 10% S Type
R433		220K
R434		2.2K
R435		56
		Test Points
TP-1	45801	
TP-2	45801	
TP-3	45801	
TP-4	45801	
		Variabl Resistors
VR401	53302	10φ for Printed Board Volume
		Jumper Wires
W401	47145	Jumper Wire A
W402	47146	〃 B
W403	47247	〃 C

AM TUNER ALIGNMENT

1. Connect an RF Generator to the AM antenna terminals. Adjust the RF and IF coils and capacitors for optimum results.
2. Adjust the AF OUTPUT control VR-301 on the AM IF circut board to provide the same audio level as the FM.





TEAC 40041

PRINTED BOARD VIEWED FROM BOTTOM

AM TUNER PARTS LIST

REF. No.	PART No.	DESCRIPTION
	48829	AM TUNER ASS'Y
		Capacitor
C301		0.02μF $^{+100}_{-0}$% 50V
C302		0.02μF $^{+100}_{-0}$% 50V
C303		0.02μF $^{+100}_{-0}$% 50V
C304		20pF ± 10% 50V
C305		0.05μF $^{+100}_{-0}$% 50V
C306		10μF 15WV (Stand Type)
C307		0.05μF $^{+100}_{-0}$% 50V
C308		0.02μF $^{+100}_{-0}$% 50V
C309		0.05μF $^{+100}_{-0}$% 50V
C310		0.005μF $^{+100}_{-0}$% 50V
C311		0.01μF $^{+100}_{-0}$% 50V
C312		30pF 15WV (Stand Type)
C313		0.01μF $^{+100}_{-0}$% 50V
C314		1μF 6WV (Stand Type)
C315		350pF ±10% 50V
		Diodes
D301		IN60
D302		IN60
D303		IN60
		Tuning Coil
L301		Bar Antenna
		Transisters
Q301		2SC371-②
Q302		2SC372-②
Q303		2SC372-②
		Resistors
R301		47K 1/4W ±10%
R302		1K
R303		15K
R304		33K
R305		100K
R306		6.8K
R307		6.8K
R308		47K
R309		1K
R310		10K
R311		33K
R312		680K
R313		56K
R314		10K
R315		1K
R316		6.8K
		IF Transformer
T-301		T-301
T-302		T-302
T-304		T-303
T-304		T-304
		Semi-Fixed Resistor
VR301		50KΩ–B10ϕ

OUTPUT TRANSISTOR PROTECTION ADJUSTMENT

NOTE: Use caution when performing this check and abjustment to prevent damage to the output transistors.

Check And Adjustment.

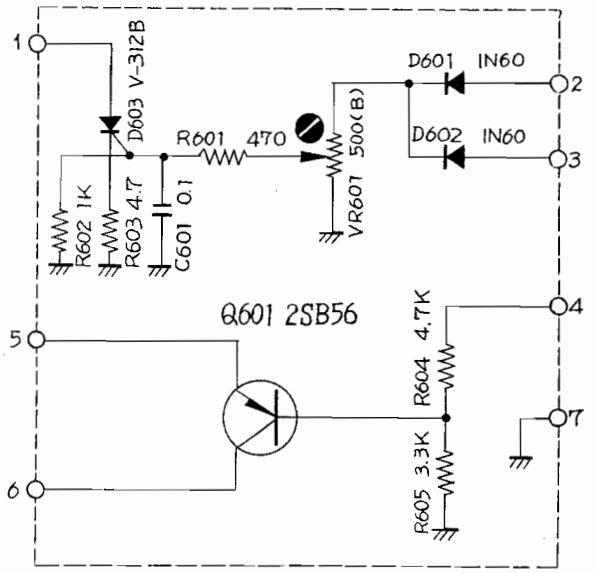
1. Connect an Audio Oscillator to the AUX input. Set the output to 1 KHz at approximately 1 volt.
2. Connect a non-inductive 8 ohm load across the speaker terminals of either channel. Connect a VTVM across the load resistor.
3. Adjust the amplifier volume so that a VTVM reading of 11 v (10 watts) is obtained.
4. Set VR-601 fully clockwise. This places the protect circuit out of operation.
5. Turn VR-601 counterclockwise slowly until the output drops to zero. The ALARM light should come on.
6. Turn the AC power off. Turn VR-601 clockwise about 30°.
7. Turn AC power on. Short out the output load momentarily. The protect light will come on. Turn AC power off. Increase the adjustment of VR-601 slightly.
8. Repeat Step 7 until the protect circuit stops working. Then slowly turn the adjustment back until the protect circuit starts working again when shorting the load.

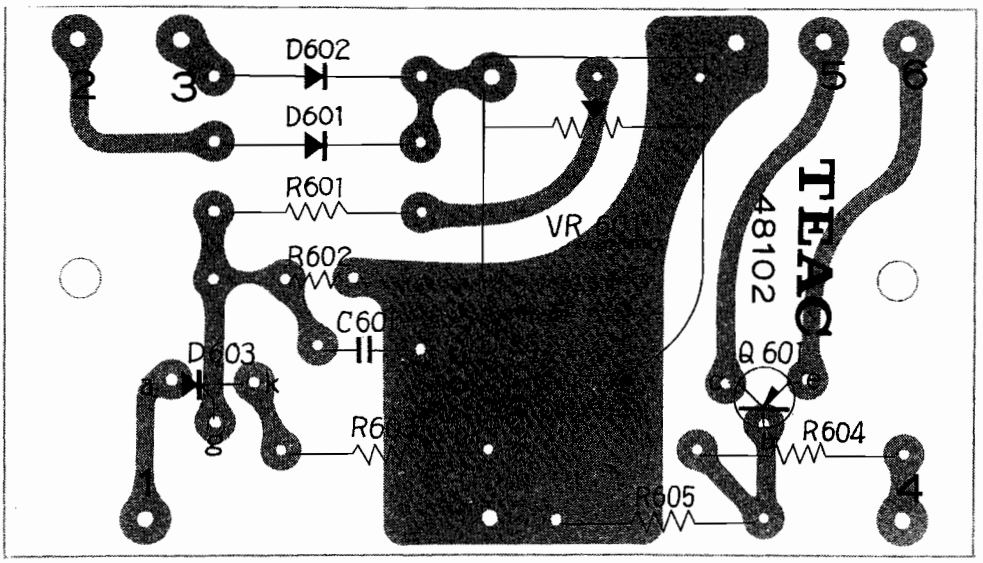
NOTE: Make this adjustment when replacing output transistors.

PARTS LIST

REF. No.	PART No.	DESCRIPTION
	48827	PROTECTION ASS'Y
		Capacitor
C601	54804	0.1μF (F) 50WV
		Diodes
D601	42213	IN60
D602	42213	IN60
D603	52801	V312B
		Transistor
Q601		2SB56
		Resistors
R601		470 1/4W 10% (S Type)
R602		1K (SR Type)
R603		4.7 (S Type)
R604		4.7K
R605		3.3K
		Variable Resistor
VR601	53329	500Ω (B) 16φ for Printed Board

OUTPUT TRANSISTOR PROTECTION CIRCUIT





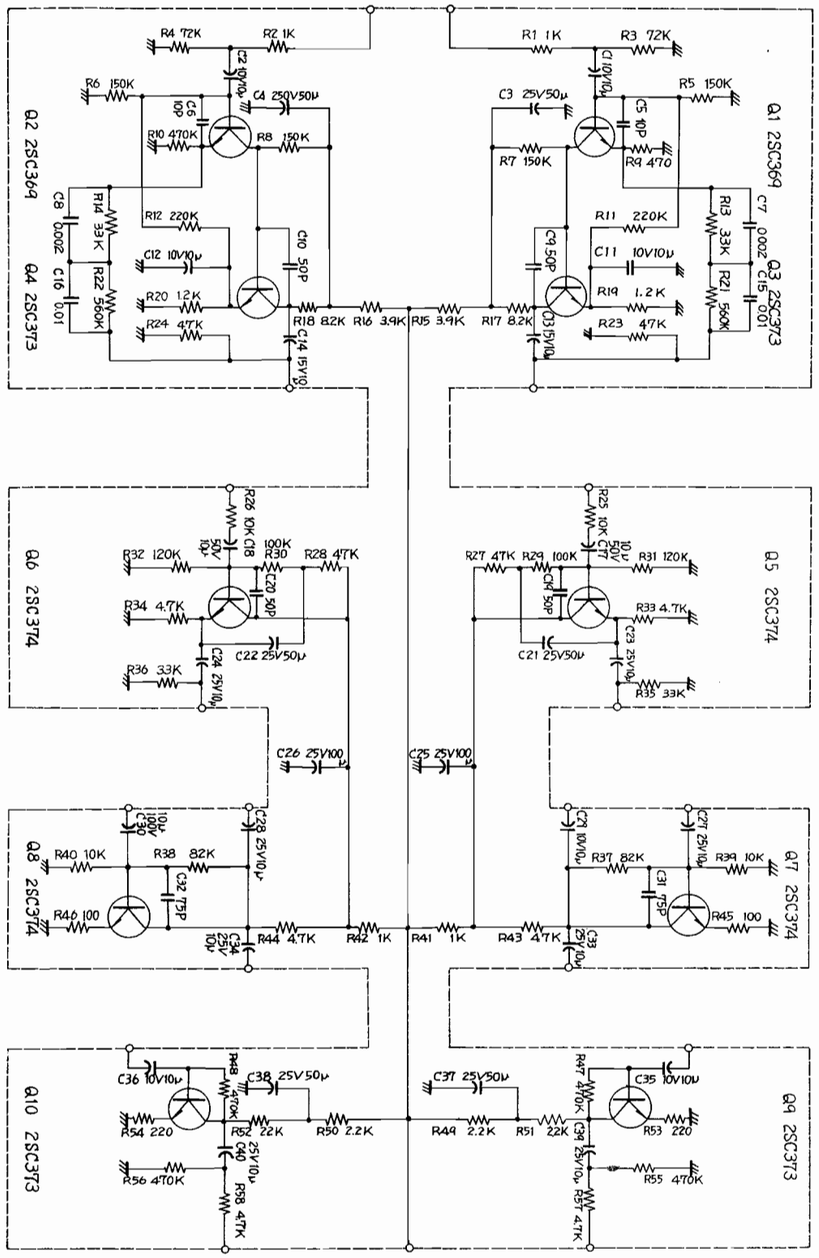
PRINTED BOARD VIEWED FROM BOTTOM

PREAMPLIFIER PARTS LIST

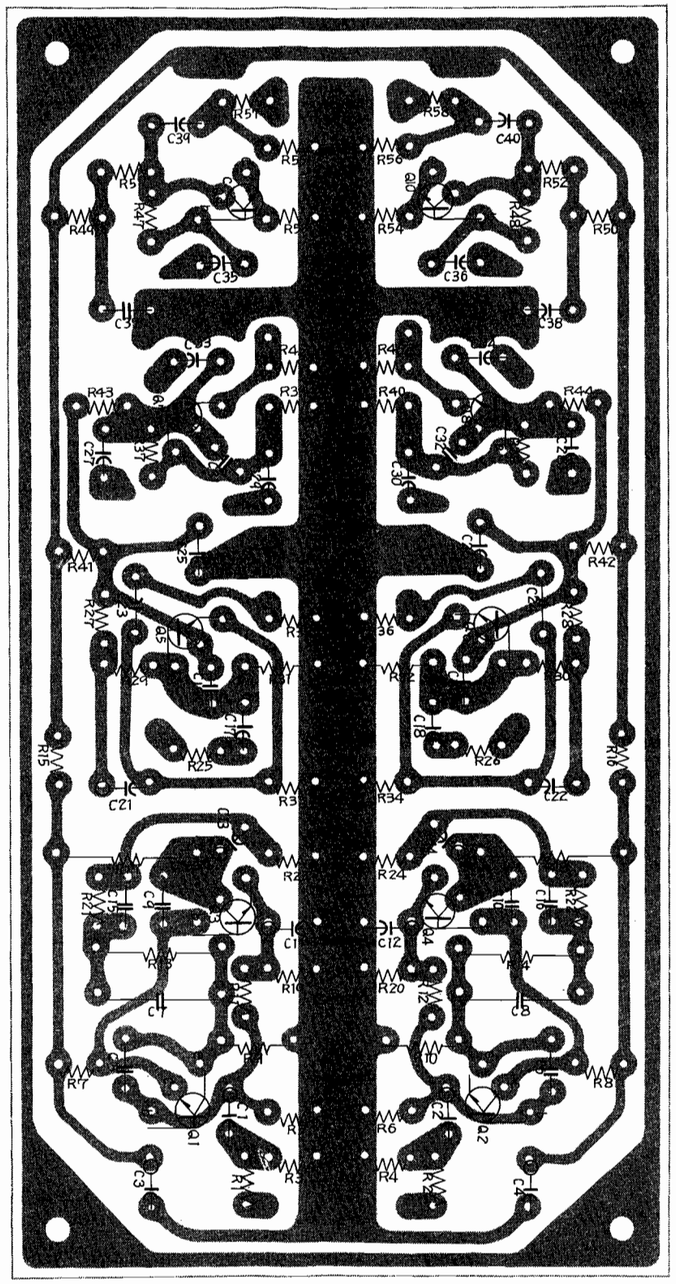
REF. NO.	PART NO.	DESCRIPTION
	48826	PREAMP ASS'Y
		Capacitors
C 1		10μF 10WV
C 2		10μF 10WV
C 3		50μF 25WV
C 4		50μF 25WV
C 5	54904	10pF (K) 50WV
C 6	54904	10pF (K) 50WV
C 7	54822	0.002μF (K) 50WV
C 8	54822	0.002μF (K) 50WV
C 9	54906	50pF (K) 50W
C10	54906	50pF (K) 50WV
C11		10μF 10WV
C12		10μF 10WV
C13		10μF 15WV
C14		10μF 15WV
C15	54802	0.01μF (K) 50WV
C16	54802	0.01μF (K) 50WV
C17		10μF 50WV
C18		10μF 50WV
C19	54906	50pF 50WV
C20	54906	50pF 50WV
C21		50μF 25WV
C22		50μF 25WV
C23		10μF 25WV
C24		10μF 25WV
C25		100μF 25WV
C26		100μF 25WV
C27		10μF 25WV
C28		10μF 25WV
C29		10μF 10WV
C30		10μF 10WV
C31	54907	75pF (K) 50WV
C32	54907	75pF (K) 50WV
C33		10μF 25WV
C34		10μF 25WV
C35		10μF 10WV
C36		10μF 10WV
C37		50μF 25WV
C38		50μF 25WV
C39		10μF 25WV
C40		10μF 25WV
		Transistors
Q 1	42327	2SC369 (blue)
Q 2	42327	2SC369 (blue)
Q 3	42338	2SC373
Q 4	42338	2SC373
Q 5	42340	2SC374
Q 6	42340	2SC374
Q 7	42340	2SC374
Q 8	42360	2SC374
Q 9	42388	2SC373
Q10	42338	2SC373

REF. NO.	PART NO.	DESCRIPTION
		Resistors
R 1		1K 1/4W 10% SR Tyde
R 2		1K
R 3		82K
R 4		82K
R 5		150K
R 6		150K
R 7		150K
R 8		150K
R 9		1K
R10		1K
R11		220K
R12		220 1/4W 10% S
R13		33K 1/4W 10% SR
R14		33K
R15		3.9K
R16		3.9K
R17		8.2K
R18		8.2K
R19		1.2K
R20		1.2K
R21		560K
R22		560K
R23		47K
R24		47K
R25		10K
R26		10K
R27		47K
R28		47K
R29		100K
R30		100K
R31		120K
R32		120K
R33		4.7K
R34		4.7K
R35		33K
R36		33K
R37		82K
R38		82K
R39		10K
R40		10K
R41		1K
R42		1K
R43		4.7K
R44		4.7K
R45		100
R46		100
R47		470K
R48		470K
R49		2.2K
R50		2.2K
R51		2.2K
R52		2.2K
R53		220
R54		220
R55		470K
R56		470K
R57		4.7K
R58		4.7K

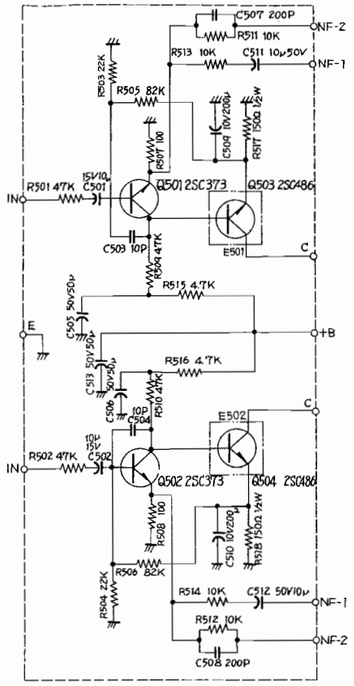
PREAMPLIFIER CIRCUIT



PRINTED BOARD VIEWED FROM BOTTOM



POWER DRIVE AMPLIFIER CIRCUIT

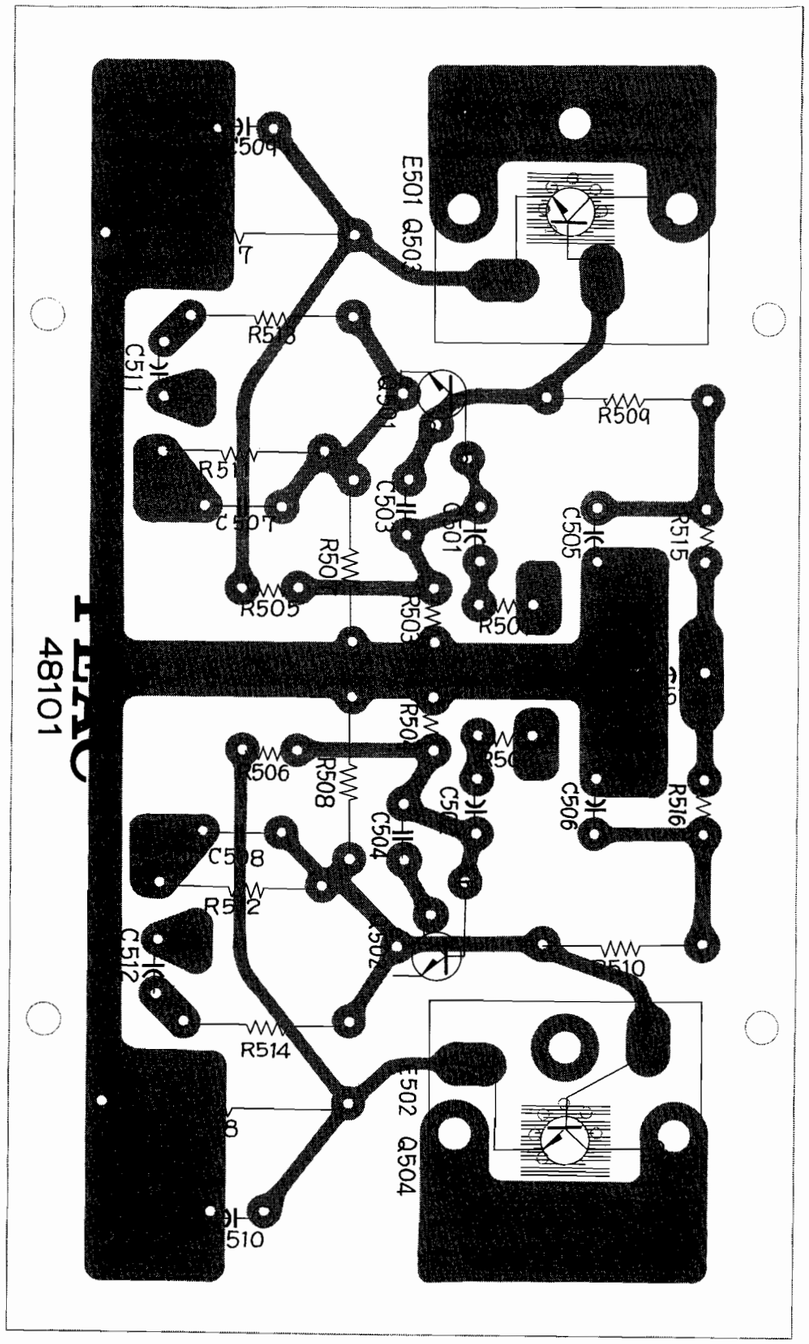


PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
	48823	POWER DRIVE AMP ASS'Y
		Capacitors
C501		10μF 15WV
C502		10μF 15WV
C503	54904	10pF (K) 50WV
C504	54904	10pF (K) 50WV
C505		50μF 50WV
C506		50μF 50WV
C507	54905	200pF (K) 50WV
C508	54905	200pF (K) 50WV
C509		200μF 10WV
C510		200μF 10WV
C511		50μF 50WV
C512		50μF 50WV
		Heat Sinks
E501	42907	
E502		
		Transistors
Q501	42338	2SC373
Q502	42338	2SC373
Q503	42339	2SC486 (Y)
Q504	42339	2SC486 (Y)

REF. NO.	PART NO.	DESCRIPTION
		Resisters
R501		47K 1/4W 10% SR
R502		47K
R503		22K
R504		22K
R505		82K
R506		82K
R507		100 1/4W 10% S
R508		100 1/4W 10% S
R509		4.7K
R510		4.7K
R511		10K
R512		10K
R513		10K
R514		10K
R515		4.7K 1/4W 10% SR
R516		4.5
R517		150 1/4W 10% S
R518		150

PRINTED BOARD VIEWED FROM BOTTOM



MINOR MAINTENANCE

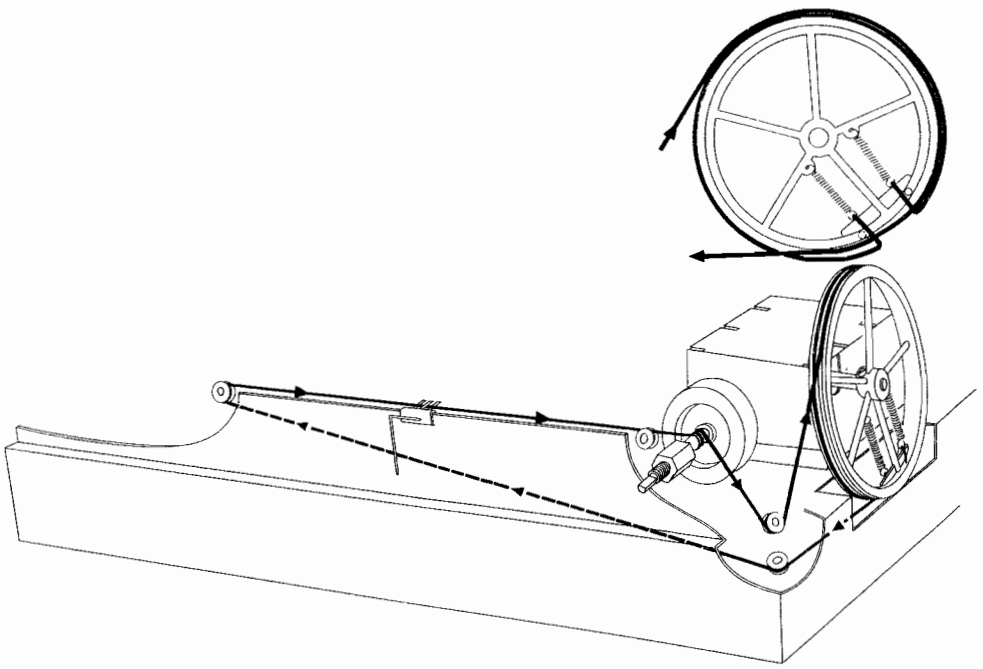
Indicator Light Replacement

1. Turn the amplifier on its side and remove the four screws next to the rubber feet.
2. Carefully slide the chassis out of the case from the front.
3. The tuning indicator and stereo indicator lights are replaced from the top. The alarm indicator light is replaced from the bottom. All three or these lights are 8 volt 150mA screw base lamps.

Dial Lignt Replacement

1. and 2. Same as Indicator Light Replacement.
3. Remove all of the knobs from the front cover.
4. Remove the nuts on the volume, tuning, source and speaker controls.
5. Separate tne front plate from the chassis.
6. Tne dial lights are a fuse type lamp located on each end of the dial glass.

DIAL STRINGING

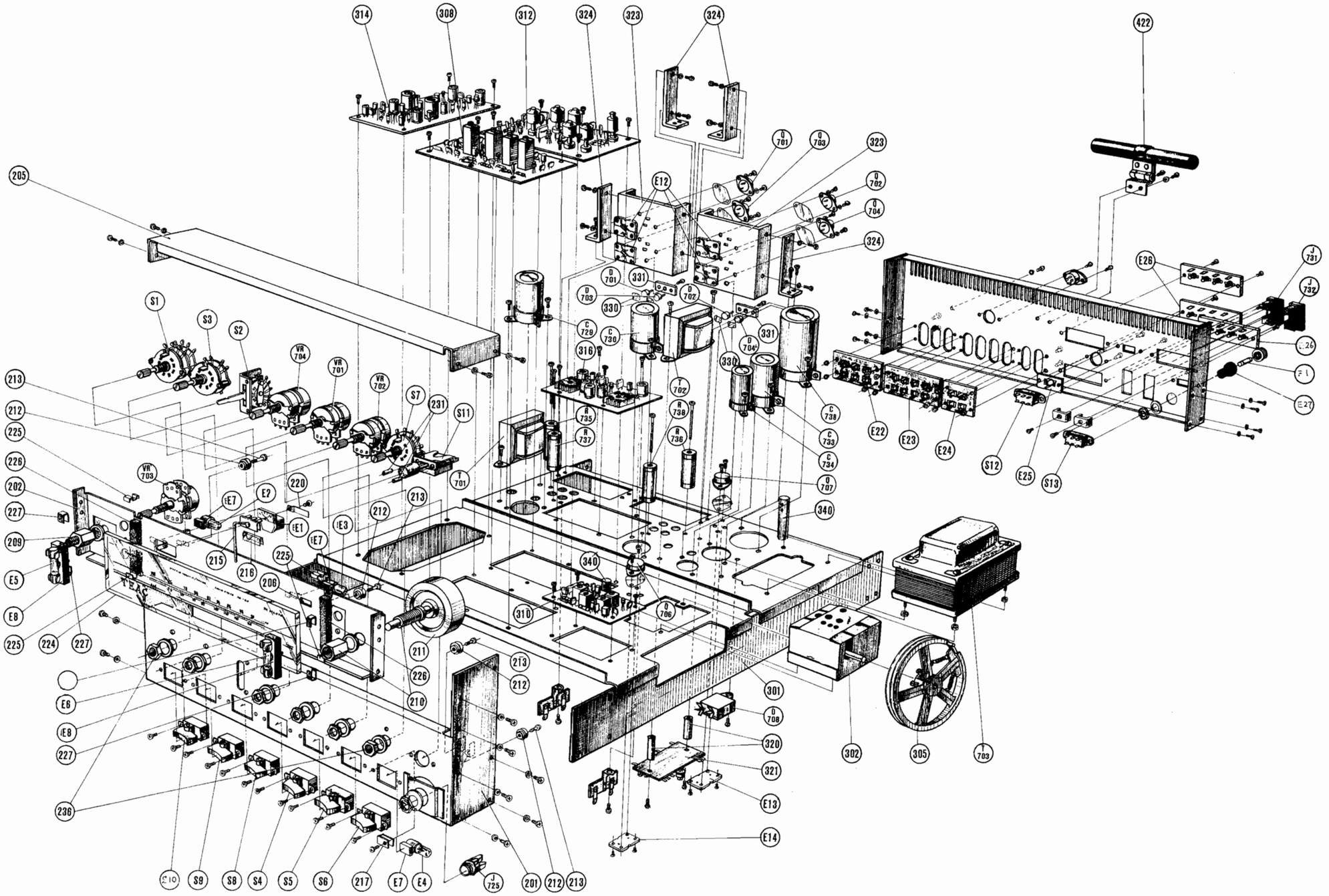


MAIN CHASSIS PARTS LIST

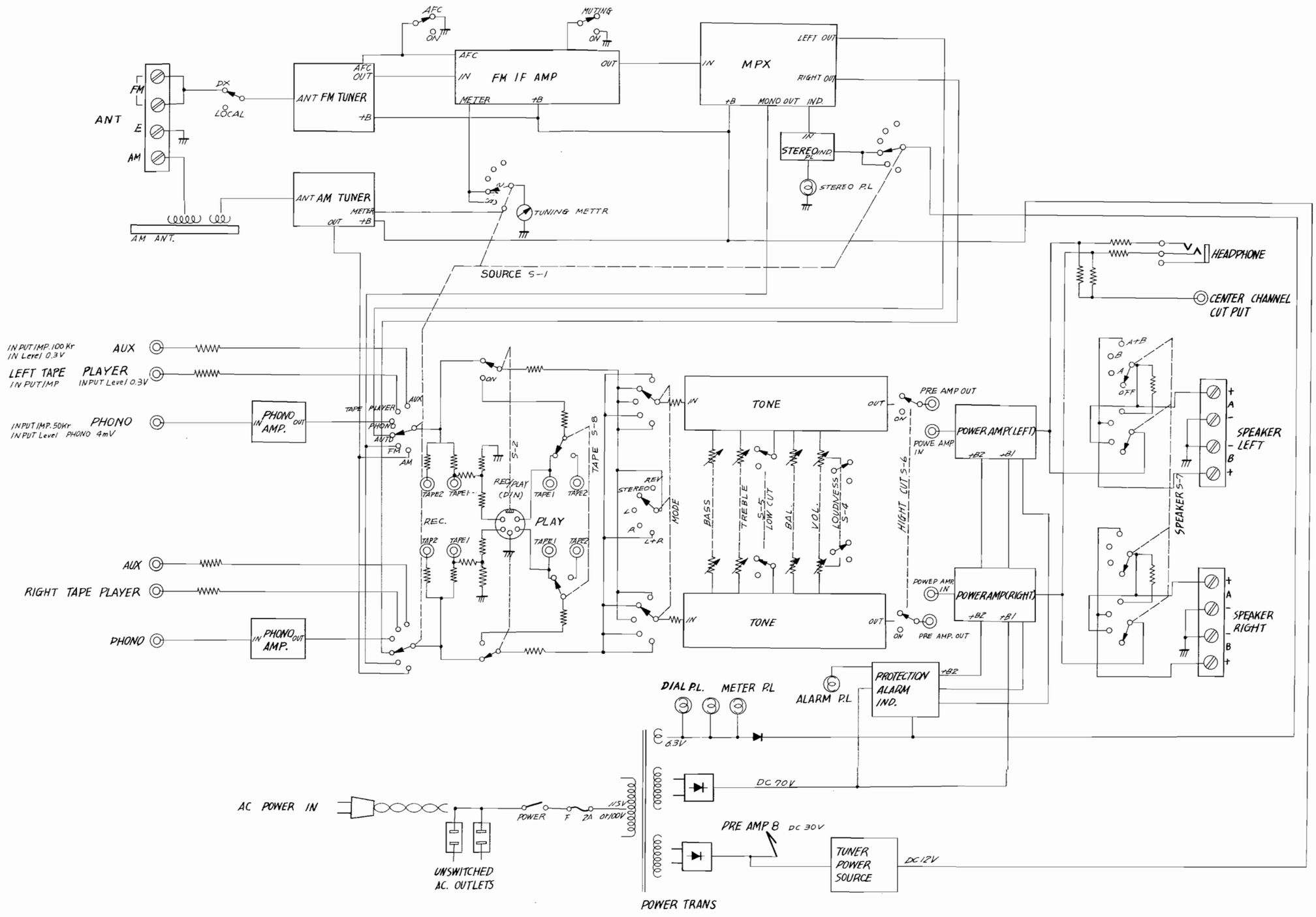
REF. NO.	PART NO.	DESCRIPTION
E 1	58200	Tuning Meter
E 2		Pilot Lamp
E 3		Indicator Lamp
E 4		Indicator Lamp
E 5	41428	Dial Lamp
E 6	41428	Dial Lamp
E 7	41503	Lamp Socket
E 8	41505	1P Fuse Holder
E12	42908	Transistor Socket
E13	42909	Transistor Socket
E14	42910	Transistor Socket
E21	43224	DIN Conector
E22	43013	6P Pin Jack
E23	43014	8P Pin Jack
E24	43015	4P Pin Jack
E25	43008	1P Pin Jack
E26	45314	4P Terminal
E27	41213	UL Fuse Post
F 1	41114	Fuse (2A)
J725		Phone Plug
J731		AC Out Lets
J732		AC Out Lets
Q701	42334	2SC493
Q702	42334	2SC493
Q703	42334	2SC493
Q704	42334	2SC493
Q705		
Q706	42336	2SC515
Q707	42337	2SD147
R735		Enamel Rhost at, 150Ω +150Ω/10HA
R736		〃
R737		〃
R738		〃
S 1	44222	Source SWitch
S 2	44708	Lever Switch
S 3	44223	Mode Switch
S 4	44110	Seesaw Switch
S 5	44110	Seesaw Switch
S 6	44110	Seesaw Switch
S 7	44224	Speaker Switch
S 8	44110	Seesaw Switch
S 9	44110	Seesaw Switch
S10	44110	Seesaw Switch
S11	44336	Power Switch
S12	44408	Slide Switch
S13	44408	Slide Switch
T701	66212-1	Driver Transformer
T702	56212-1	Driver Transformer
T703	56146	Power Transformer

REF. NO.	PART NO.	DESCRIPTION
VR701	53505	20KΩ×2
VR702	53505	20KΩ×2
VR703	53504	50KΩB×2
VR704	53713	50KΩM, 50KΩN
1	23236	Front Panel
2	25269	Knob A
3	25271	Knob A′
4	25272	Knob B
5	25274	Lever Switch Knob
6		
7		Nut M9
8		Washer M9
20		Case
21	21544	Screw M4×20
22	28517	Washer
205	28383	Rubber Foot
206		Top Cover
207		Screw M3×6
347	23249	Bottom Panel
348		Scraw M4×4
201	23251	Front Chassis
202	23250-1	Dial Back Panel
205	27397	Indicator Window
206	23254	Top Panel
209	25277	Collar
210	23244	Dial Shaft Ass'y
211	23215	Fly Wheel
212	23231	Pulley
213	27393	Screw
215	23232	Dial Pointer
216	27391	Mylar Sheet A
217	23225	Alarm Indicator Holder
220	23226	Meter Holder
224	23214	Dial Glass
225	23214	Dial Glass Holder
226	23228	Sponge A
227	23248	Dial Glass Holder Sponge
231	24079	Collar
236		Nut M9
301	23255	Main Chassis
302	40039U	Front End Ass'y
305	23239	Dial Pulley
308	40040U	IF Amp Ass'y
310	40041	AM Tuner Ass'y
312	48825	MPX Ass'y
314	48826	Pre Amp Ass'y
316	48823	Power Amp Dliver Ass'y
320	24078	Collar
321	48827	Protection Ass'y
323	42911	Heat Sink
324	23224	Heat Sink Holder
340	24080	Stat
422	56900	Bar Anttena Ass'y

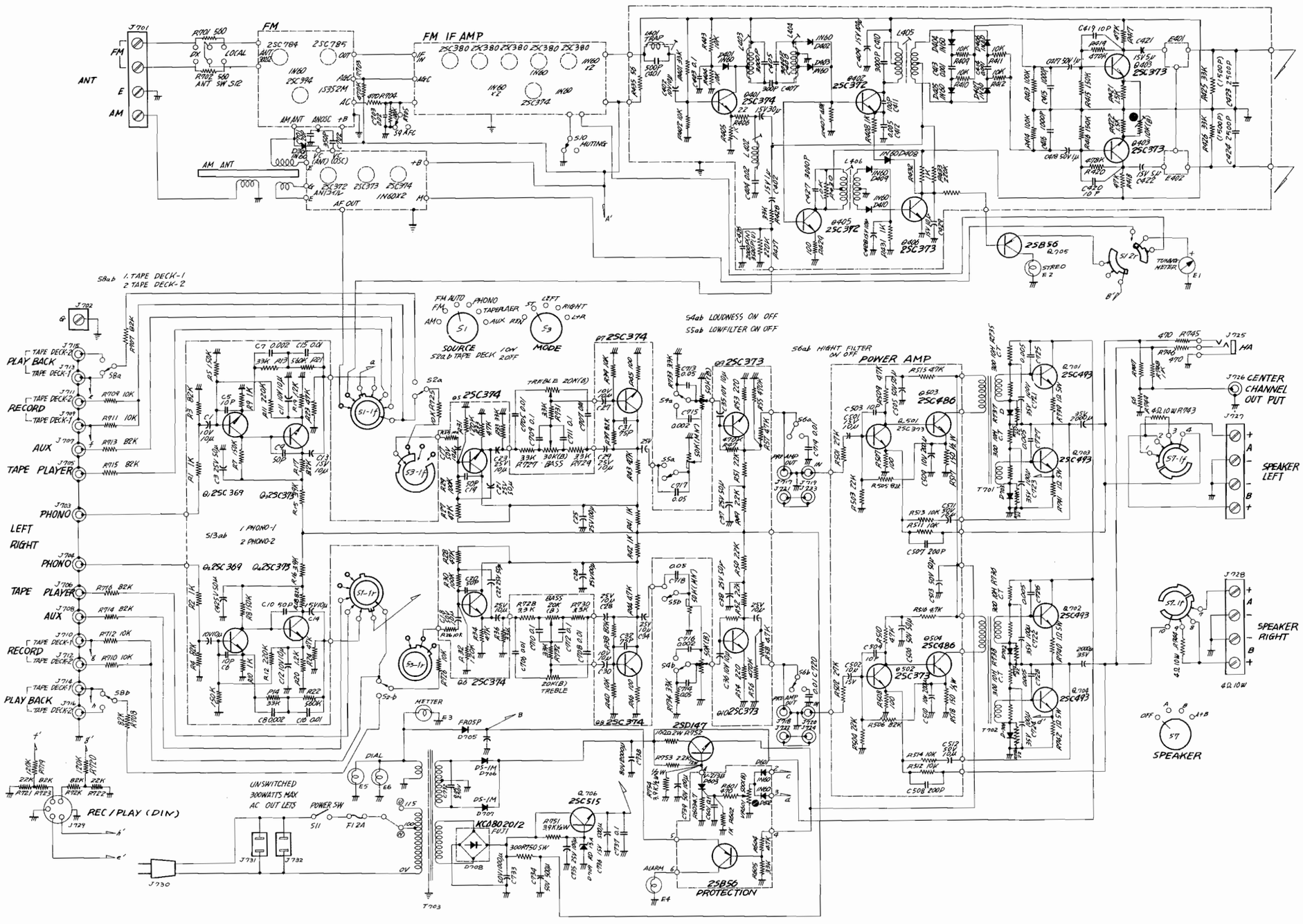
MAIN CHASSIS EXPLODED VIEW



AS-60 SIMPLIFIED BLOCK DIAGRAM



AS-60 SCHEMATIC DIAGRAM



PARTIAL DISASSEMBLY